

**RECEIVED
CENTRAL FAX CENTER****APR 12 2007****REMARKS**

By this amendment, Applicants have amended the claims to more clearly define their invention. In particular claim 11/1 has been rewritten in independent form by including therein all of the limitations of claim 1, from which claim 11/1 previously depended. Claim 11 has also been amended to recite that the Al content is 8 to 18%. This amendment is supported by the description at, e.g., page 6, lines 11-13 (for the lower limit of 8%) and page 14, Table 1, alloy number 6 (for the upper limit of 18%). Claim 11 has also been amended to recite that the content of Zn is 0.1 to 5%. This amendment is supported by the description at, e.g., page 7, lines 22-24 of applicants' specification. Claim 11 has also been amended to recite that the content of Sn is 1 to 8%. This amendment is supported by the description at, e.g., page 7, lines 15-18 of applicants' specification. Claim 11 has also been amended to recite that the die cast article has a cast structure including an Mg-Al intermetallic compound phase and an Mg-Sn intermetallic compound phase. This amendment is supported by the description at page 6, line 25, to page 7, line 2; page 7, lines 8-10; and page 17, lines 7-24 of applicants' specification. Finally, claim 11 has been amended to recite that the cast article produced by injection molding using a metal mold. See, e.g., original claims 2-8 and the sentence bridging pages 21 and 22 of applicants' specification.

Claim 12 has been amended to recite that the Mg based casting alloy contains at least one element selected from the group consisting of Ca, Si and rare-earth elements of which the total content is less than 5% by weight and at

least one element selected from the group consisting of Sr, Sb of which the total content is less than 1%. This is supported by, e.g., page 8, lines 8-12 of applicants' specification.

Applicants have canceled claim 13 and non-elected claims 1-10 and 14-29, without prejudice or disclaimer.

Applicants have added claims 30-41 to define further aspects of the present invention. These claims are supported by, e.g., page 6, line 11 to page 8, line 24 and Table 1 on page 14 of applicants' specification.

The Examiner alleges the Information Disclosure Statement filed December 31, 2003 to fail to comply with 37 CFR 1.98(a)(1) which now requires that U.S. patents and U.S. patent application publications be listed in a section separately from citations of other documents. Accordingly, the Examiner has refused to consider references AU-AV. The holding that the Information Disclosure Statement fails to comply with the rule and the refusal to consider documents AU-AV are traversed.

The requirement that U.S. patents and U.S. patent application publications be listed in a section separately from citations of other documents was included in Rule 98 by a rule change effective October 21, 2004. See, 69 *Federal Register* 56482. The amendment to Rule 98 can be found at page 56542 and the discussion thereof at page 56510. The effective date of the rule change is indicated at page 56482. Prior to October 21, 2004, it was not required that U.S. patents and U.S. patent application publications be listed in a section separately from citations of documents. Since the Information Disclosure Statement and

issue was filed on December 31, 2003, prior to the effective date of the rule change, this requirement did not apply to the Information Disclosure Statement. Therefore, the Information Disclosure Statement was proper and documents AU-AV should be considered by the Examiner. Should the Examiner desire a revised form PTO/SB/08B listing these documents, the Examiner is respectfully requested to contact the undersigned.

The Examiner has objected to claims 11-13 as allegedly containing informalities; in particular, the Examiner considers claims 11-13 to be incomplete since they recite limitations from non-elected claims. While this objection is traversed, applicants have now rewritten claim 11 in independent form and canceled the non-elected claims. Accordingly, this objection is moot.

Claims 11-13 stand provisionally rejected on the ground of non-statutory double type patenting as being unpatentable over claims 1-5 of copending application number 10/996,039. It is noted that application number 10/996,039 has not been allowed; in fact, the application has an outstanding Office Action for which no response has been filed. Unless and until the copending application issues as a patent, a proper (i.e., a nonprovisional) obviousness-type double patenting rejection cannot be made. Moreover, should the copending application become abandoned, the provisional obviousness-type double patenting rejection must be withdrawn.

Claims 11-13 stand rejected under 35 U.S.C. 103 as being unpatentable over DE 1 259 578. Applicants traverse this rejection and request reconsideration thereof.

The abstract of the cited reference describes Mg alloys having a heterogeneous and finely grained structure because of a finely dispersed metal phase in the alloy, molten Mg or molten Mg alloy containing metal additions, e.g., Mg_3Ba , Mg_2Co , Mg_2Ge , Mg_3Sb_2 , Mg_2Si or Mg_9Sr , which are soluble in the melt, but only up to 0.1% below the solidus temperature. It is disclosed that the alloys are sprayed in the form of small droplets, cooled to below the solidus temperature and mechanically worked in a known manner, e.g., by extrusion pressing. It is also disclosed that the mechanical strength may be further improved by the additions of Mn 0.1 to 2.5%, Al 0.1 to 13%, Zn 0.1 to 9%, Sn 0.1 to 16%, and Ag, Bi, Zr, Th, and rare earth metals, each in a specific amount.

The present invention, however, is not directed only to an Mg alloy but to a die cast article produced by injection molding an Mg-based casting alloy using a metal mold. The abstract of DE 1259578 does not disclose and would not have suggested such a die cast article produced by injection using a metal mold.

Moreover, DE 1259578 does not disclose the specific Mg-based casting alloy used to form the die cast article, including the presently claimed ranges of Al, Zn, Sn and Mn, or the fact that the article has a cast structure that includes a Mg-Al intermetallic compound phase and a Mg-Sn intermetallic compound phase.

The present invention can provide a cast article having a high tensile strength of 270 Mpa or more and high ductility of 3% or more as shown in Figs. 6 to 9 of the present application due to the specific cast structure defined in the claims.

A die cast article that has a specific cast-structure including a Mg-Al intermetallic compound phase and a Mg-Sn intermetallic compound phase, as defined in the present invention, requires defining upper and lower limits for component contents so that strength and ductility can be higher than a certain level. On the contrary, if an alloy includes components in a quantity out of such limits, the strength and ductility of that alloy will not reach the level that the present invention has achieved. Neither the specific Mg-based casting alloy used to form the die cast article of the present invention, including the presently claimed ranges of Al, Zn, Sn and Mn or the fact that the article has a cast structure that includes a Mg-Al intermetallic compound phase and a Mg-Sn intermetallic compound phase, nor the advantageous properties of the article achieved thereby are disclosed or suggested by DE 1259578.

According to the present invention, adding a specific amount of Al and Sn to the Mg-based casting alloy lowers its melting point and considerably raises its molten flow, thereby enabling the manufacture of thin items or small articles by casting to be made more easily. See, page 6, line 11 to page 7, 19 of applicants' specification, Fig. 4 and the description thereof in applicants' specification. DE 1259578 does not describe and would not have suggested any information concerning the molten flow behavior or the particular amounts of Al and Sn that achieve this behavior.

The present invention uses an alloy having a low melting point (lower than AZ91D, a conventional Mg alloy) and an improved (increased) molten flow property (higher than AZ91D). As explained in applicants' specification, by

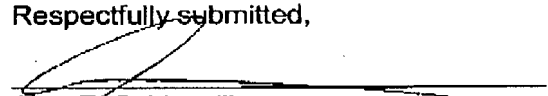
adding Al and Sn to the Mg alloy in the amounts claimed, the liquidus temperature (a melting point and an essential property in performing injection molding) of the alloy is lowered by as much as 25 to 37 °C (compared to AZ91D) and the molten flow thereof is largely raised to about 350 mm (in contrast to AZ91D being about 100 mm), as shown in Fig. 4 of the present application. DE 1259578, however, does not mention the molten flow behavior as is stated above. The present invention enables casting articles in more complicated shapes than can be achieved if casting is performed at the same temperature with the conventional alloy. Alternatively, an article having the same shape of an article cast using a conventional alloy can be made by casting the alloy used in the present invention at a temperature more than 20 °C lower than casting conventional alloys.

In DE 1259578, the Mg alloy powder is plastic-formed by an extrusion process so as to be given a worked-structure, which differs from the cast structure defined in the present invention. There is no reason to discuss the molten flow behavior or lowering of the melting point in DE 1259578 since it deals with an extrusion process not injection molding. Therefore, the concept of the cited reference is different from the technical idea in the present invention. Therefore, it would not have been obvious to modify the teachings of DE 1259578 to arrive at the presently claimed invention.

In view of the foregoing amendments and remarks, favorable reconsideration and allowance of all the claims now in the application are requested.

To the extent necessary, applicants petition for an extension of time under 37 CFR 1.136. Please charge any shortage in the fees due in connection with the filing of this paper, including extension of time fees, to the deposit account of Antonelli, Terry, Stout & Kraus, LLP, Deposit Account No. 01-2135 (Case: 503.39364CX1), and please credit any excess fees to such deposit account.

Respectfully submitted,


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